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## Notes on Japanese Lichens. IV.

By

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### On *Leptogium tremelloides*, *L. Caesium* and *L. moluccanum* from Japan.<sup>1</sup>

Some species and varieties of *Leptogium tremelloides* group have hitherto been recorded from Japan. The determinations of these lichens, however, do not coincide with each other, even those of eminent lichenologists. They have often identified those specimens with isidiose thalli as *L. caesium*, taking little attention on the anatomical characters as well as the localities collected. The excellent diagnoses of Wainio<sup>2)</sup> in connection with the plants in question are chiefly based on the structure of thallus and apothecium<sup>2)</sup>, to which I should like to make following additional observations.

I should say that I could trace the same confusion among European specimens. A specimen of a non-isidiose fertil plant from an island in the Adriatic sea, which I possess, is named as *Leptogium tremelloides*, but the anatomical feature showed that of *L. caesium* as the parenchymatous excipulum is well developed and the marginal cortex of receptaculum is of one cellular layer. Another isidiose steril Scandinavian specimen under the name of *L. caesium* must belongs to a variety of *L. moluccanum* as its thalline structure agrees with the latter.

1. The spores of *L. tremelloides*, *L. caesium* and *L. moluccanum* almost agree in form and dimension.

2. The thickness of the cortex of *L. moluccanum* is  $\frac{1}{10}$  (at least  $\frac{1}{15}$ ) of the thallus, and gonidia are distributed almost uniformly in the medulla.

1) Compare the figures in the Japanese text.

2) *Étud. Lich. Brésil.* vol. I, p. 223-225.

3) Among the european species determined by the modern lichenologists.

3. The thickness of the cortex of *L. tremelloides* and *L. caesium* is maximum  $\frac{1}{15}$  but usually  $\frac{1}{20}$  of the thallus, and gonidia are more closely distributed to the both surfaces, leaving much mucous space in the middle.

Regarding to the distribution within the empire *L. tremelloides* is limited to Formosa and Lochou archipelago. Its thallus never bears isidia. *L. caesium* is met with in Formosa, Lochou, Kiusiu, Shikoku and also in the southern Pacific coast of Hondo. Its thallus is usually isidiose, very rarely almost naked.

*L. moluccanum* is more widely distributed than other two species in Japan. It is found in the subtropical provinces as well as in the northern mountainous districts. In contrast with the other two species *L. moluccanum* has thinner thallus than the other two species, the medulla of receptaculum is very poorly developed, so that hypothecium and cortex approach closely together. *L. moluccanum* occurs in Japan in three varieties:

1. a form having nonisidiose broad laciniae, common throughout in the empire. *Leptogium tremelloides* or *L. azureum* of previous authors belongs at least partly to this variety. 2. a form having isidiose broad laciniae, rarer than above form, occurring both in warmer as well as in colder region. Undoubtedly *Leptogium pichneoides* Nyl, which was collected at Mt. Fuji belongs to this variety. 3. a form having smaller lobes, the margins and surfaces becoming isidioso-microphylline. *Leptogium tremelloides* v. *myriophyllum* Müll. Arg.<sup>3)</sup> belongs to this variety.

These facts induced me to propose following taxonomical alterations:

***Leptogium tremelloides*** (Linn. fil.) Wain. Etud. Lich. Brés. I, p. 224.

Lochou, Formosa.

***Leptogium caesium*** (Ach.) Wain. Etud. Lich. Brés. I, p. 225.

Formosa, Lochou, Kiusiu, Shikoku, Southern Pacific coast of Hondo.

***Leptogium moluccanum*** (Pers.) Wain. Etud. Lich. Brés. I, p. 223.

**var. *myriophyllum*** (Müll. Arg.)

*Leptogium tremelloides* v. *myriophyllum* Müll. Arg. in Hedw., vol. xxx, 1891, p. 181. Hondo.

**var. *azureum*** (Auct.)

*Leptogium tremelloides* Ach. Nyl. Lich. Jap. p. 15.

*Leptogium tremelloides* Fr., *Leptogium tremelloides* Fr. var. *azureum* Nyl. Müller Arg.: Nuovo. Giorn. Bot. ital. 1891, p. 120.

Hondo, Shikoku, Kiusiu.

**var. *pichneoides*** (Nyl.)

*Leptogium pichneoides* Nyl. Lich. Jap. p. 15. Hondo.

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3) I am very much indebted to Prof. R. Chodat, who has kindly allowed me to investigate the original specimen of Müller Arg.